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The Physiological Impact of Stress on Performance in Tactical Populations: A Critical Review

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Introduction

• Excess stress has been shown to have a negative effect on task performance, cognitive ability, and physical health in cadets (1).

• Stress has previously been correlated with performance where peak performance occurs with an optimal amount of stress (2).

• Police work is inherently stressful due to personal risk exposure, confrontation of violence and involvement in traumatic incidents (3). Potential threats to law enforcement officers (LEOs), such as grasping holstered sidearms, being called in for back up to critical incidents, and being involved in physical altercations, have all been shown to increase their heart rates dramatically (4).

• The aim of this review was to critically appraise the available literature on stress and performance in tactical personnel and to synthesize the study findings.

Method

- Search terms were generated from known literature and a rapid search review. Once confirmed these terms were entered into four selected databases (Embase, ProQuest, CINAHL, and Medline (OVID)).
- Search terms included specific tactical populations, a stressful training scenario, and a measure of performance to the stressful scenario (see search term table for specifics).
- Articles were critically appraised to determine the methodological quality by two authors (J.A. C.C.) using a modified Downs and Black Checklist (5).
- The level of agreement was measured through Cohen's kappa coefficient being calculated by a third author (R.O.) and presented as a percentage to determine the Critical Appraisal Score (CAS) and quality of the studies according to Kennelly's grading system (6).

Results

• Figure 1 provides an overview of the review and screening process of all articles.

• Following analysis of the articles, the mean CAS was 50%, ranging from 21%* being of 'poor' quality to 64%* being 'good' quality according to Kennelly's grading system (6). (Figure 2)

• Kappa coefficient was a 43% level of agreement (k=0.429).

• Of the ten included studies*, four were from the US, two from Canada, one from Norway, one from Australia, one from England, one from France.

• The largest sample size was 335 active duty military members from the USA, all being male and the smallest was a sample size of 13 from the French Training Institute to Submarine Safety in France.

• Outcome measures included (but were not limited to) blood pressure, heart rate, cortisol levels, drug calculation scores, gunshot accuracy and State-Trait Anxiety Inventory (STAI).

• Eight of the ten studies reported a change in performance between the non-stressful and stressful scenarios while the other two studies reported an increase in dissociative symptoms which led to a change in performance.

*Additional list of references available upon request

Conclusion

• This research shows that performance in tactical populations can be influenced by stress.

• Tactical personnel should be aware of the impact occupational stresses have on their performance as well as the physiological changes their body undergoes in the line of duty.

• Due to the limited amount of evidence and variability of outcome measures used in the included studies, future studies should use identical outcome measures to increase the level of evidence and ability to draw conclusions.

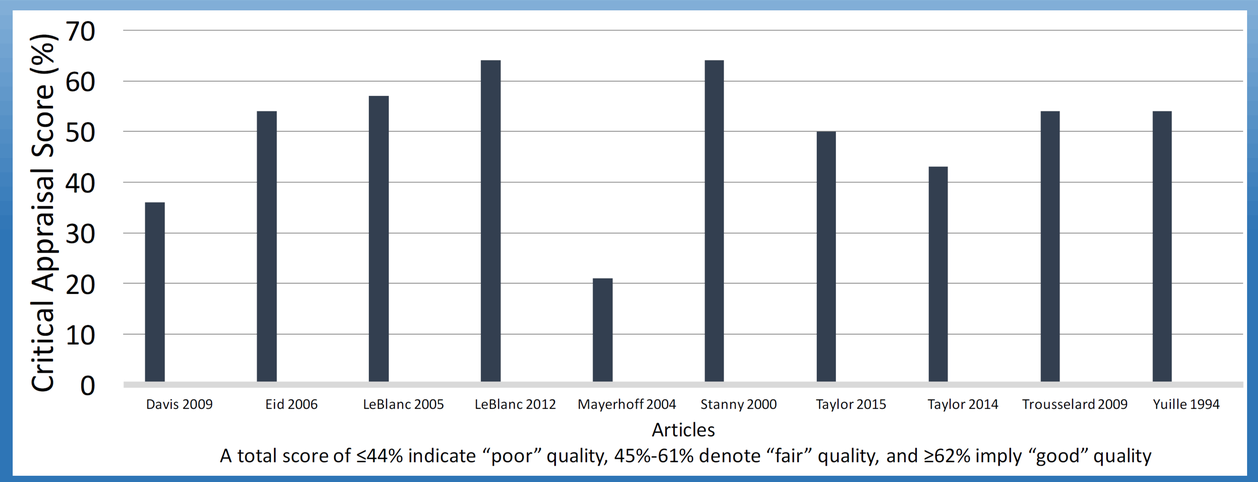

Figure 2 Critical Appraisal Score determining the quality of the included studies

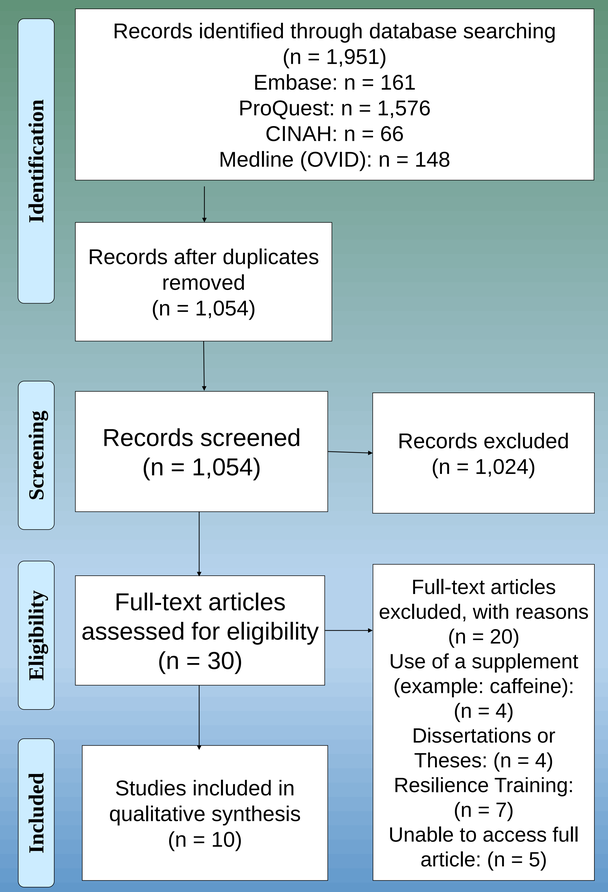

Figure 1 PRISMA Flow Chart showing an overview of the review and screening process of all articles

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